Introduction to the Thysanoptera of New Caledonia

By FRED A. BIANCHI

Experiment Station, H.S.P.A., Honolulu

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THIS paper is based entirely upon collections made by Dr. F. X. Williams between July and November of 1940, in the course of an entomological survey of New Caledonia conducted under the auspices of the Experiment Station, H.S.P.A. Excepting Bagnall's description of *Docessissophothrips monstrosus* (Transactions of the Northumberland, Durham, and Newcastle-upon-Tyne Natural History Society, 3 : 538, 1909), this constitutes to my knowledge the first printed mention of the thrips of that large and important Pacific island, and I consider myself very fortunate to have the chance of making it my first significant contribution to our knowledge of the Thysanoptera, a group to which for several years I have dedicated the spare time left me by other duties.

One variety and 22 species are here recorded: the variety and 14 species in the Terebrantia and eight species in the Tubulifera. Nine species, one variety, and one genus are described as new; eight species were known previously only from Australia; two are known elsewhere in the Pacific; and four are of cosmopolitan or semi-cosmopolitan distribution. Obviously this is not a long list for an island of New Caledonia's size, with a flora which is known to comprise more than 2,500 species of plants, a large proportion of them indigenous. It is a list, however, which almost certainly will grow, slowly through the accretion of native species which are bound to be discovered from time to time, and rapidly through the introduction of foreign species which must follow the accelerated tempo of postwar trade.

The affinities of the New Caledonia Thysanoptera appear now to be preponderatingly Australian. This is to be expected from the relative nearness, geographical and commercial, of the two countries, but in the state of our knowledge of the Thysanoptera in New Caledonia and in the Pacific area as a whole, it is not safe to assume that the affinities will prove exclusively Australian in the end. Since the affinities of the extensive indigenous flora of New Caledonia are twofold, Indo-Malayan and Australian, we may expect increased knowledge to show a parallel condition in the Thysanoptera, as it has already appeared in other orders.

From the viewpoint of Hawaii and the sugar industry it is interesting that of the 23 species listed, eight were collected by Dr.

Williams on cultivated *Saccharum* or wild relatives thereof. It is to be noted, however, that none of the species which are known to feed on sugar cane in other parts of the world have been found in New Caledonia; and further, that it will take more research to establish which of the New Caledonian species actually do have that habit. It is possible that some of the species which Dr. Williams collected on *Saccharum* were using the plant only as a perch, although this was probably not so in the case of species found repeatedly within the spindle of the plant.

The following tabulates for convenient reference the species discussed in this paper and their distribution:

	Known in Australia	Known elsewhere in the Pacific	Cosmopolitan or nearly so
Tubulifera			
1. *Cryptothrips dimidiatus* Hood	×		
2. *Gastrothrips noumeae* sp. nov.			
3. *Scopaeothrips intermedius* sp. nov.			
4. *Haplothrips gowdeyi* (Franklin)	×	×	×
5. *Haplothrips angustus* Hood	×		
6. *Halplothrips victoriensis* Bagnall	×		
7. *Haplothrips victoriensis* Bagnall var. nov. *nepouiensis*			
8. *Podothrips xanthopus* Hood	×		
9. *Dichaetothrips adventor* sp. nov.			
Terebrantia			
1. *Aeolothrips inauditus* sp. nov.			
2. *Heliothrips rubrocinctus* (Giard)		×	×
3. *Chirothrips aculeatus* Bagnall	×		×
4. *Scirtothrips albomaculatus* sp. nov.			
5. *Ensiferothrips primus* sp. nov.			
6. *Anaphothrips speciosus* Hood	×		
7. *Anaphothrips swezeyi* Moulton		×	
8. *Taeniothrips kellyanus* (Bagnall)	×		
9. *Taeniothrips novocaledonensis* sp. nov.			
10. *Isochaetothrips seticollis* (Bagnall)	×		
11. *Isochaetothrips insignis* sp. nov.			
12. *Diarthrothrips saccharicolus* sp. nov.			
13. *Thrips tabaci* Lindeman			×
14. *Thrips imaginis* Bagnall	×		

All the material of Dr. Williams' collecting, including types and paratypes of the new species, is deposited in the collection of the Experiment Station, H.S.P.A., Honolulu, Hawaii.

Suborder Tubulifera Haliday, 1836
Superfamily Phloeothripoidea Hood, 1915
Family Phloeothripidae Uzel, 1895
Subfamily Phloeothripinae Karny, 1921
Tribe Hoplothripinae Priesner, 1927

Genus **Cryptothrips** Uzel

Uzel, Monographie der Ordnung Thysanoptera: 230, 1895.
Priesner, Die Thysanopteren Europas: 484, 1927.

Cryptothrips dimidiatus Hood

Hood, Memoirs Queensland Mus. **6**: 145, 1918.
Kelly and Maynard, Mon. of the Order Thys. in Australia: 57, 1934.

Previously known in and described from North Queensland. Three females collected by Dr. Williams on *Casuarina* at Noumea on July 21, two males and many females at Noumea or near it, by beating and without record of host plant, July and September.

Genus **Gastrothrips** Hood

Hood, Proc. Ent. Soc. Wash., **14** [3]: 156, 1912.
Hood, Revista de Entomologia (Rio de Janeiro), **5** [2]: 16, 1935.

Gastrothrips noumeae sp. nov. (pl. XIII, fig. D)

Female (macropterous): Length about 1.8 mm. Color by transmitted light, dark brown with only the third antennal segment, the fore-tarsi and the distal third of the fore-tibiae along its inner margin light brownish yellow. Eyes, ocellar crescents, hypodermal tissue orange-yellow. Wings almost hyaline, except base and scale of fore wing which are smoky brown.

Head about equally long as wide across middle of eyes; cheeks slightly arched and converging toward base; vertex broadly arched, slightly produced between eyes, bearing middle ocellus at apex; occiput faintly, transversely striate only on the sides and bearing few (10-12) small, weak spines. Eyes occupying a little more than a third of cheek length; the distance between them considerably greater than their diameter; their facets without pilosity between them, relatively small and uniform in size, eight or nine of them on the outer outline of the eye; their dorsal outline rounded inwardly; their ventral outline somewhat produced caudally and inwardly. Ocelli widely separated; anterior one frontally directed, on apex of vertex and slightly overhanging base of antennae; posterior pair very near inner margins of eyes, on or near a line across anterior third of eyes. A small spine forwardly directed and about an ocellar diameter in front of each posterior ocellus; a somewhat smaller spine the same distance back and slightly inward of each posterior ocellus. Postocular spines thin, sharply pointed, about equal in length to an ocular diameter and set a fourth of their length back of the eyes. Mouth cone nearly reaching hind margin of prothorax, its nearly straight sides convergent to the rounded end; the labrum blunt and not surpassing the labium.

Antennae typical of the genus, shaped as illustrated, somewhat more than twice as long as head. Segment 3 light brownish yellow, in strong contrast to the others, which are concolorous with head. Segment 3 with two sense cones, one lateral and one ventral; 4 with three sense cones, two lateral and one ventral; 5 with two lateral and one dorsal; 6 with a small outer dorsal

cone and a longer inner cone; 7 with a long dorsal cone. Segments 4 to 6 only slightly but distinctly produced on the ventral surface.

Prothorax about seven-tenths as long as head; sides diverging sharply to about middle, thence more gradually to hind margin; median pronotal suture dark, not attaining either margin; pronotal disk faintly, irregularly wrinkled but without distinct sculpturing or striation, bearing only two small, sharp setae approximate to the meson on the cephalic third of the segment, and two of the same size caudo-laterad of the first. The usual pronotal setae all present, all sharply pointed and nearly colorless; epimerals and postero-angulars about three-fourths, mid-laterals about one-half, antero-angulars about one-fourth the length of prothorax; postero and antero-marginals minute.

Pterothorax widest on anterior half, suddenly constricted in the middle and sides thence arching and converging to base. Mesoscutum weakly striated with short, transverse, curved anastomosing lines; bearing a conspicuous circular pit on either side of the meson and a series of about eight smaller pits along the posterior margin. Metascutum bearing two long (.041 mm.) sharp bristles removed from each other by somewhat more than their length and from the anterior margin of metascutum by somewhat less than their length. A rather short, thornlike spine on either side and cephalad of the narrowed anterior margin of the first abdominal segment.

Legs normal; fore femora moderately incrassate; all femora and tibiae rather sparsely setose, the setae becoming longer near the distal end of the tibiae with one particularly long seta outwardly on the intermediate and hind tibiae. Fore coxae armed outwardly with a rather thin, transparent hair about equal in length to the antero-angulars of the prothorax.

Wings long, almost hyaline except at base and scale of fore wing which are smoky brown; ciliae brownish, the fore wing bearing four to seven accessory ones; sub-basal setae colorless, proximal and distal one long and nearer fore margin of wing than intermediate one, which is minute.

Abdomen widest on segments 6 and 7, thence abruptly narrowed to base of tube. The usual bristles present, light brown and pointed; those on segment 9 almost colorless distally, quite long and thin. Tube length about equal to, sometimes a little less than, head length; width at end .6 width of base. Tube constricted near its end; its surface with scattered, very minute setae.

Measurements of female holotype in mm. (paratype in parentheses): body length 1.8 (1.8); head length .184 (.184); head width .184 (.184); prothorax length .139 (.139); prothorax width (including coxae) .266 (.266); tube length .172 (.184); tube width at base .065 (.065); tube width at end .036 (.036); epimeral setae .086 (.082); setae at end of tube .192 (.205).

Antennal segments:	1	2	3	4	5	6	7	8	Total length
Type	..	.053	.697	.053	.053	.053	.036	.032	.377
Paratype	..	.049	.069	.057	.057	.057	.041	.032	.....

Male (macropterous):—Very similar in color and shape to female; differing as follows: fore femora incrassate; fore tibiae more distinctly elbowed near base and paler in color; basal segment of fore tarsi inwardly produced into a strong, broad-based, slightly recurved tooth; two unequal coxal setae, both stout, spine-like; surface of tube, at least basally, with small, more or less longitudinal raised areas which under high magnification make the surface appear rough.

Sternite of abdominal segment 9 (scale) is narrowed in its distal half and its sides become almost parallel, overlapping the base of the tube.

Measurements of male allotype in mm.: Body length 1.55; head length .172; head width .172; tube length .184; tube width at base .065; tube width at end .032; setae on abdominal segment 9 .205; setae at end of tube .189.

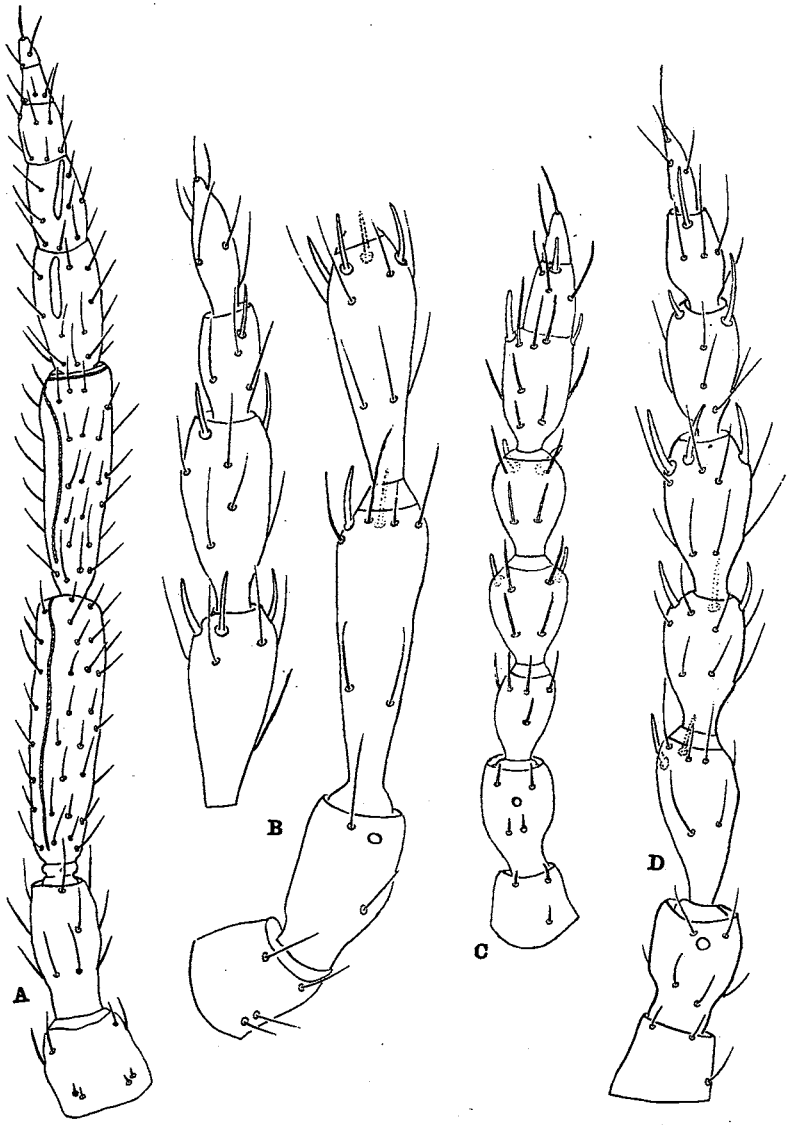


PLATE XIII

A—*Aeolothrips inauditus* sp.n. Right antenna of female; ventral view.
B—*Dichaetothrips adventor* sp.n. Right antenna of female; dorsal view.
C—*Scopaeothrips intermedius* sp.n. Left antenna of female; dorsal view.
D—*Gastrothrips noumeae* sp.n. Left antenna of female; dorsal view.

Antennal segments:	1	2	3	4	5	6	7	8	Total
	..	.049	.065	.053	.053	.049	.032	.028	.354

Described from numerous males and females beaten from grass; hills back of Noumea; September 24.

In the arrangement of the sense cones and in the unarmed fore tarsi of the female, this new species seems to belong in the *abditus, corvus, capitalis* group; being nearest to *abditus* but distinguishable from it by the distinctly pointed pronotal setae and from the others of the group, as well as *abditus,* by the hyaline wings.

Genus **Scopaeothrips** Hood

Hood, New Genera and Species of North American Thysanoptera from the South and West; Proc. Biol. Soc. Wash., **25**: 61-76, 1912.

Scopaeothrips intermedius sp. nov. (pl. XIV, fig. A and pl. XIII, fig. C)

Female (macropterous): Length 1.3 mm. Color by transmitted light from lemon to orange-yellow mottled with brown; tube and antennal segments 4 to 8 brown, not mottled; mesoscutum and metascutum mottled, darker than rest of body except narrowly along meson; eyes and ocellar crescents dark red. Striation distinctly reticulate on dorsum of head, metascutum, dorsum of first, second, ninth abdominal segments; on mesoscutum and other parts of body varying from semi-reticulate to transverse anastomosing lines. On sides of abdominal segments some of the striae are produced caudally into short, sharp, broad-based microtrichia visible only under high magnification. Pronotum sculptured with dark raised areas of irregular size and shape separated by pale anastomosing lines and depressions.

Head wider than long, slightly constricted back of eyes and at base; a thin, dark, sinuous line marking off a narrow collar-like area at base; cheeks weakly arched; dorsum and sides with reticulate striation which in dorso-ventral mounts under high magnification causes cheeks to appear serrate; front produced between the eyes, separated from their margins by a deep furrow and bearing the anterior ocellus at its apex; anterior ocellus smaller than posterior ocelli and these directed dorso-laterally, removed by less than one ocellar diameter from margins of eyes. Eyes occupying less than half of head length; facets uniform in size, about eight on outer outline of eye, a few small spines between them. A sharp seta about twice as long as the diameter of an ocellus back and somewhat inward of each posterior ocellus; on same longitudinal line but forward of each posterior ocellus a very minute seta; on the same transverse line as the latter but nearer the margin of each eye and outside of ocellar triangle a somewhat longer seta. Back of each eye and just laterad of its inner edge a short, thick, infundibuliform postocular seta. Over dorsum and sides many short, sharp, wide-based spines. Antennae as figured, about one and a half times the head length; three basal segments lighter in color than distal five, which are dark brown; segments 3 to 5 about equal in length but 3 always narrower than 4 or 5; segments 3 to 6 pedicillate; 7 almost perfectly cylindrical and broadly joined into a club with 6 and 8; each segment with four or five transverse striae which sometimes anastomose; each segment with two whorls of weak, short, translucent hairs, one above, the other below the middle of the segment; segment 6 bearing the longest hairs, which are about two-thirds the length of the segment. One circular sense area on dorsal surface of second segment; two sense cones

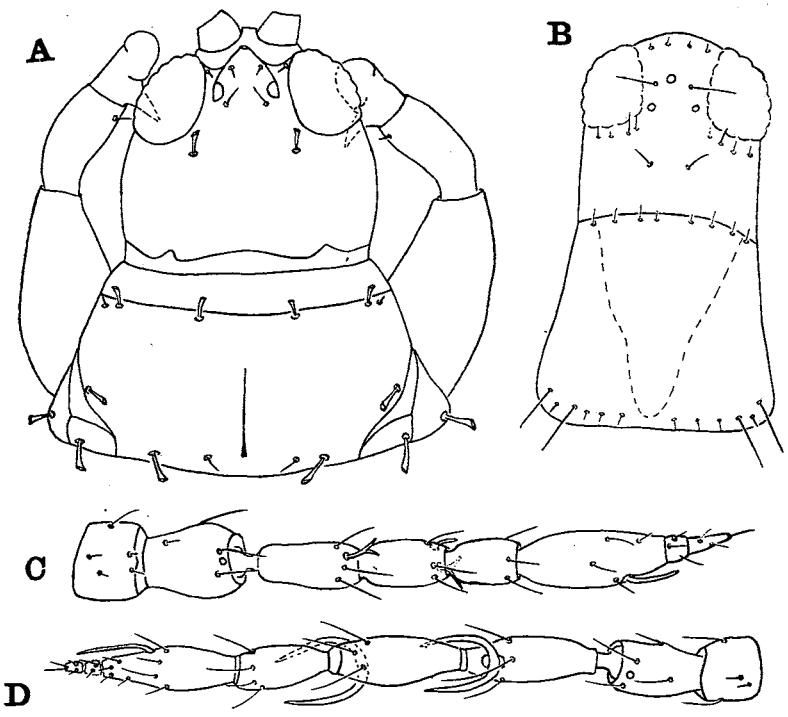


PLATE XIV

A—*Scopaeothrips intermedius* sp.n. Head, prothorax, and fore legs of macropterous female.

B—*Diarthrothrips saccharicolus* sp.n. Head and prothorax of macropterous female, with discal prothoracic setae omitted.

C—*Diarthrothrips saccharicolus* sp.n. Left antenna of female, dorsal view.

D—*Taeniothrips novocaledonensis* sp.n. Left antenna of female, dorsal view.

on each of segments 4, 5, and 6, latero-ventrad on 4 and 5, laterad on 6; one sense cone dorsad near the end of segment 7. Mouth cone short, rounded, in specimens not distended reaching almost to hind margin of prosternum; labrum abruptly narrow and dark near tip, maxillary and labial palpi two-segmented, in both cases the distal segment much longer than the basal one.

Prothorax about seven-ninths as long as head and at base much wider than head; sometimes medially depressed and with a narrow incomplete median groove; the sides diverging to about middle then parallel to hind angles; antero-angular, antero-marginal, mid-lateral, epimeral, postero-angular, and coxal setae all present, short and infundibuliform, pale in color and difficult to make out against the darker pronotum; a minute sharp seta laterad of each antero-angular and a somewhat longer sharp seta mesad of each postero-angular; some 30 or 40 minute thorns more or less symmetrically dispersed over disk and sides of pronotum. Pterothorax short, as wide as prothorax in front, narrowing slightly to hind margin, with many short, stiff thorns on meso- and metascutum and a few on the sides. Legs normal, rather short and stout, with only weak, translucent hairs, fore femora incrassate; basal segment of all tarsi with a small curved claw ventrally, and in the fore tarsi also produced inwardly into a long, strong, sharp tooth. Wings colorless, broad, not narrowed in the middle, reaching to about fifth abdominal segment in specimens not distended; the fringe long and straight, without double hairs; fore wings with three short, infundibuliform sub-basal setae.

Abdomen broad and relatively short, broadening abruptly from base to second segment, of practically unvarying width thence to segment 6; segment 7 somewhat narrower; 8 and 9 narrowing abruptly to base of tube. Bristles at angles and hind margins of all segments short, thick, infundibuliform, except middle pair of segments 2 to 7 which are wing-retaining spines, long, pointed, and inwardly curved. A row of six minute intermarginal spines on the sides of each segment, along the transverse median line, and a single, somewhat longer spine just caudad of each row are not infundibuliform. Tube less than twice as wide at base as at end and tapering evenly backwards; with a small circular porus on each side near the end; with many minute spines scattered over the surface and, on the end, with six weak, translucent hairs about two-thirds the length of the tube set between six much shorter ones.

Measurements of female holotype in mm.: Length 1.3; length of head .16; width of head .19; length of tube .12; width of tube at base .06; width of tube at end .03.

Antennal segments:	1	2	3	4	5	6	7	8	Total
	.030	.039	.036	.036	.036	.055	.030	.018	.280

Male (macropterous): Length 1.1 to 1.4. Like the female in every respect except that the abdomen tapers gradually from segment 6 to the base of tube, and tube is somewhat shorter and relatively stouter.

Measurements of male allotype in mm.: Length of head .15; width of head .19; length of prothorax .19; width of prothorax .24; length of tube .09; width of tube at base .06; width of tube at end .03.

Antennal segments:	1	2	3	4	5	6	7	8	Total
Allotype	.033	.045	.036	.036	.036	.045	.030	.018	.279
Paratype	.033	.045	.042	.042	.042	.051	.030	.024	.309

Described from three males and one female collected by beating on *Casuarina collina* Poiss; hills back of Noumea; April 24.

This new species appears to be related to the *Rhopalothrips-Rhopalothripoides-Froggattothrips* group as well as to *Scopaeo-*

thrips. The club-like end of the antennae shows its affinities to the former, but the peculiarly produced front places it is *Scopaeothrips*. Hence I choose to call the species *intermedius;* and to place it in *Scopaeothrips*—in preference to erecting a new genus for this single species—I am forced to expand *Scopaeothrips* to include forms in which some antennal segments are consolidated, as well as forms in which all the segments are free and of normal form.

Tribe Haplothripini Priesner, 1927

Genus **Haplothrips** Amyot and Serville

Amyot and Serville, Hist. Nat. Ins. Hemipt: 640, 1843.
Priesner, Die Thysanopteren Europas: 564, 1927.

Haplothrips gowdeyi (Franklin)

1908—*Anthothrips gowdeyi* Franklin; Proc. U. S. Nat. Mus., **33**: 725.

1910—*Anthothrips variabilis* Crawford; Pomona College Jl. Ent., **2** [1]: 166.

1912—*Haplothrips gowdeyi* (Franklin); Hood: Proc. Biol. Soc. Wash., **25**: 62.

1918—*Haplothrips gowdeyi* (Franklin); Hood; Memoirs Queensland Mus., **6**: 127.

1928—*Haplothrips gowdeyi* (Franklin); Moulton: Thys. of the Hawaiian Islands; Proc. Haw. Ent. Soc., **7** [1]: 125.

1933—*Haplothrips gowdeyi* (Franklin); Moulton: Rev. de Ent. **3** [3]: 389.

1934—*Haplothrips gowdeyi* (Franklin); Kelly and Mayne; Monograph of the Order Thysanoptera in Australia: 45.

1939—*Haplothrips gowdeyi* (Franklin); Moulton: Thysanoptera collected by the Mangarevan Expedition; Occ. Papers Bishop Museum, **15** [12]: 145.

1944—*Haplothrips gowdeyi* (Franklin); Moulton: Thysanoptera of Fiji; Occ. Papers Bishop Museum, **17** [22]: 298.

A widespread species that has been reported up to now from southern United States, Mexico, Central America, Brazil, Barbados, St. Vincent and Puerto Rico, and in the Pacific from Hawaii, Midway, Fiji, Moorea, Mangareva, Rapa and Australia.

Many males and females collected at or near Noumea during July, August, and September from *Argemone mexicana* Linn., *Ipomoea,* cucumber, in the spindle of sugar cane (two females), and one other unrecorded host.

Haplothrips angustus Hood

1919—Hood: Proc. Biol. Soc. Wash., **32**: 77.

1934—Kelly and Mayne: Monograph of the Order Thysanoptera in Australia: 46.

Described from specimens collected on grass at Brooklyn, New South Wales.

Dr. Williams' collections were as follows: at Nepoui, August, in spindle of wild grass resembling *Saccharum,* five females; on sugar cane, two females and one male; at Noumea, August 23, in spindle of sugar cane, one female; September 27, in spindle of sugar cane, one female; August, on sugar cane, one male; August 15, on *Croton,* many females; September 25, ex flowers of mango, one male, three females.

Haplothrips victoriensis Bagnall

1918—Bagnall: Brief Descriptions of New Thysanoptera IX; Ann. Mag. Nat. Hist., [9] **1**: 208.

1921—Karny: Ergaenzung zu Priesner's "Haplothripen Studien"; Die Australischen Haplothripinen; Treubia, 2 [1]: 23 (fig. on p. 27).

1934—Kelly and Mayne: Monograph of the Order Thysanoptera in Australia: 44.

Has been collected from a long list of hosts in Victoria and from "flowers" on Mt. Tambourine, Queensland. Collected by Dr. Williams as follows: Noumea or near it, July 11, on rose flower, one male; August, flowering *Jasminum,* many males and females; Yahoue Valley, August 29, by beating, many males and females; Oua Tom, September 20, on *Melaleuca* flower, many males and females; Hienghene, October 5, *Chenopodium,* few males and females.

Haplothrips victoriensis var. nov. **nepouiensis**

Differs from the typical *victoriensis* only in having four to six, instead of ten to 12, accessory hairs on fore wings, and in not having a sense cone on the inner side of the third antennal segment.

One male and two females collected by Dr. Williams at Nepoui in the spindle of a wild grass resembling *Saccharum,* August.

Genus **Podothrips** Hood

Hood, Two New Thysanoptera from Puerto Rico; Insecutor Inscitiae Menstruus, **1** [6]: 67, 1913.

Podothrips xanthopus Hood

1919—Hood: Proc. Biol. Soc. Wash., **32**: 82.

1934—Kelly and Mayne: Monograph of the Order Thysanoptera in Australia: 49.

Described from a single female collected by sweeping in Nelson, North Queensland.

Five females collected by Dr. Williams on flowers of *Lantana sellowiana* Link & Otto at Noumea, September 6.

Subfamily Megathripinae Priesner, 1927
Tribe Compsothripini Priesner, 1927

Genus **Dichaetothrips** Hood

Hood, Studies in Tubuliferous Thysanoptera; Proc. Biol. Soc. Wash., 27: 164, 1914.

Dichaetothrips adventor sp. nov. (pl. XIII, fig. B)

Female holotype (macropterous):—Color by transmitted light dark reddish brown; abdominal segments 7 to 9 and tube darker, almost black; all tarsi, fore tibiae, all of antennal segment 3 and distal portion of 2 sometimes—but not always—lighter, tending to yellowish brown. Eyes orange, ocellar crescents and hypodermal pigment red. Wings weakly washed with yellow; fore wing more darkly maculated anteriorly on about basal quarter, the macula gradually narrowing toward middle of wing; hind wing maculated on anterior half near base, narrowly along anterior margin for about a third of the wing length and also narrowly along median line for more than half the wing length.

Head little more than 1.5 as long as wide; very slightly widened to about half, thence weakly, evenly narrowed to slight constriction just cephalad of thickened, collar-like basal suture which is likely to be obscured by overlapping connective membrane; vertex roundly declivous, not at all produced. Eyes small, occupying about one-quarter head length; finely faceted, with about ten facets on outer outline; slightly protruding anteriorly on inner angle, not at all on sides. Ocelli larger than eye facets; the anterior one forwardly directed on the declivous vertex, just back of a tangent drawn from eye to eye; the posterior pair practically touching inner margins of eyes at about their middle. Postocellar setae about equal to eye length; placed about one ocellar diameter back of each ocellus and in line with its inner margin. Postoculars at least twice the length of an eye; placed pronouncedly outward of inner corner of eye and a little over one ocellar diameter caudad of it. Anteocellar and other setae on dorsum and cheeks minute. Striation transverse and rather faint on most of dorsum; a few more pronounced reticula near the inner hind angle of each eye.

Antennae shaped as illustrated; sensory cones ending in a point but rather thick for their length, which is about a quarter that of segment 3; segment 3 with two cones, one ventral and one on outer side; 4 with four; 5 with three, two on outer side, one on inner side; 6 with two small cones dorsally; 7 with one small cone dorsally; 1, 2, 8 with none, but 2 with usual porus dorsally.

Prothorax a little less than one-half as long as head, about 1.6 as wide as head along hind margin (exclusive of coxae); front margin weakly concave and hind margin broadly convex; sides diverging strongly to about middle, thence weakly to hind angles, emarginate at anterior angle of epimera; median pronotal suture not reaching either the anterior or posterior margins; striation consisting of rather wide, pale colored lines, transverse narrowly along fore and hind margin, reticulate on both sides of disk, very weak on either side of median suture. Epimeral setae dark brown, straight, less than ½ as long as prothorax; postero-angulars, translucent, almost colorless, relatively thin, about 1.3 the length of prothorax, their point of insertion removed from hind margin by little less than one-fourth the length of prothorax. Mid-laterals, antero-angulars, antero-marginals, small and thick; postero-marginals minute.

Pterothorax almost square, almost as wide as prothorax including fore-coxae. Mesoscutum with transversely reticulate striation; with two prominent pori widely separated and ahead of the transverse median line; with another, more approximate pair of pori behind the transverse median line;

with four minute to small setae on each side along the hind margin, the median pair of these the longest. Metascutum reticulate; a series of three weak spines progressively longer from the outer to the inner one at each anterior angle; another pair approximate to the meson and twice their own length caudad of the fore margin.

Legs normal, with many scattered short, stiff setae on femora and tibiae; the tibiae outwardly near end with at least one thin, pale hair much longer than the others; fore tarsi with a very small, broad, recurved tooth inwardly at the apex of the basal segment.

Wings well developed; with 19-24 accessory ciliae; with sub-basals concolorous with wing, evenly spaced on a straight line, the proximal one half as long as the other two, which are sub-equal.

Abdomen when not distended, elliptical, widest at segment 5; with the usual setae very long, light brown; the laterals on segments 5 to 9 equal or nearly so. Tube relatively slender, more than twice as wide at base as at end, tapering evenly to about last eighth then more abruptly to end; terminal setae a little shorter than tube, shorter than laterals on segment 9.

Measurements of female holotype in mm. (paratype in parentheses): Body length 4.00; head length .395 (.379); head width across cheeks .252 (.252); length of prothorax .173 (.158); width of prothorax .395 (.379); length of tube .395 (.379); width of tube at base .126 (.126); width of tube at end .055 (.055); dorsal length of eye .096; distance from base of postocular setae to eye .032; postocular setae .237 (.237); postocellar setae .096 (.096); epimeral setae .080 (.080); posteroangulars .252 (.252); longest setae of segment 9 (laterals) .442 (.442); terminal setae of tube .316 (.316).

Antennal segments:	1	2	3	4	5	6	7	8	Total length
Type			.112	.102	.089	.073	.044	.051	.....
Paratype	.064	.076	.112	.102	.086	.070	.044	.048	.602

The male unknown. Described from two females, one on croton leaves, the other (holotype) on sugar cane leaves; Noumea, August 15 and August 22, respectively.

It is to be noted that while my two specimens agree closely in every other respect, one of them, perhaps a teneral individual, has the tarsi, fore tibiae, and third antennal segment distinctly lighter in color than the rest of the body.

This species is clearly distinguished from all others of its genus by the peculiar chaetotaxy of the prothorax. I know of no other species in which the epimeral seta is thornlike, stiff, relatively short, and dark, while the seta usually considered as "paired" with it is hairlike, pale, and exceptionally long. The size, shape, and position of the fore tarsal tooth are also noteworthy.

Suborder Terebrantia Haliday, 1836
Superfamily Aeolothripoidea Hood, 1915
Family Aeolothripidae Uzel, 1895
Subfamily Aeolothripinae Bagnall, 1913

Genus **Aeolothrips** Haliday

Haliday, Ent. Mag. 3 [5]: 451, 1836.
Priesner, Die Thysanopteren Europas: 97, 1926.

Aeolothrips inauditus sp. nov. (pl. XIII, fig. A)

Female (macropterous) :—Body length 1.9 mm. Color by transmitted light yellow-brown except distal third of antennal segment 2, basal two-thirds of antennal segment 3, and basal one-third of hind tibiae, which are white, lightly tinged with yellow. Eyes black; ocellar crescents and hypodermal pigment red.

Head little wider than long, widest across cheeks which arch gently and are constricted just back of eyes; space between eyes wide, weakly arcuate; slightly forward of hind margin and parallel to it, a thin dark line which marks the edge of a slight collar-like thickening; occiput transversely striate; occiput and vertex with many short setae, a more or less longitudinal series of three or four meso-caudad of each posterior ocellus slightly longer and thicker than the others. Eyes occupying little more than a quarter of head length, weakly protruding at inner angle in front; their ventral portion narrowed and produced caudally, their facets smaller and of more uniform size on their dorsal than their ventral portions, in both cases well separated from each other and with minute thorns between them. Ocelli larger than facets, well apart; the front one forwardly directed on the declivous vertex of head; the hind ones approximate to the eyes, clearly forward of their hind margins. Mouth cone constricted below middle and thence almost tubular to end, which reaches or barely surpasses the hind margin of prosternum; maxillary palpi very large, three-segmented, the distal segment small in comparison to the others; labial palpi long and strong, outwardly arched, four-segmented, the basal segment very short but broader than second.

Antennae not quite three times as long as head, quite slender, approximate at base; segment 3 longest, its pedicel with a distinct ringlike thickening; segments 5 to 9 progressively shorter and narrower, broadly joined into a club; segments 1, 2, and 3 at base conspicuously transversely striate with striae which under high magnification are seen to be produced into closely set microtrichia; all segments with several whorls of short, stiff, light colored hairs; segment 3 with a thin, apparently nodulose sense area which is more or less transverse dorsally near tip of segment and runs down the outer side to nearly the base; segment 4 with a similar long sense area whose transverse portion lies on the ventral surface of the segment; segments 5 and 6 with an elongate elliptical sense area, not nodulose, ventrally on the upper half of the segment.

Pronotum a little shorter than head and very slightly wider on hind margin; with numerous very small stiff setae on disk and sides; with a conspicuous dark band across whole width near posterior margin. Pterothorax normal; widest in middle, arched sides thence converging weakly towards posterior margin. Legs rather long and thin, with numerous short spines; conspicuously striate, like antennae, with thin dark lines which are produced into microtrichia visible only under high magnification; fore femora relatively short and thick, fore tarsi armed with the usual recurved hook.

Fore wings rounded at ends; reaching to about 7th abdominal segment; about seven times as long as wide in middle; their inner edge almost straight and their outer edge curved gently inward on basal fourth, so that distal three-quarters of wing are slightly wider than basal one-quarter, distal fifth and basal fourth pale yellow to colorless except at extreme base and on ring vein which, like the remaining portion of the wing, are brown or shaded with brown. Front vein connected with ring vein by two cross veins, the first about one-third, the second about two-thirds of the wing's length from its base; front and hind vein connected by one cross vein somewhat distad of the first cross vein mentioned above; hind vein and ring vein connected by two faint cross veins nearly opposite to the first two mentioned above. Scale entirely light brown, with a series of about 11 setae on anterior margin, one discal

seta near base, and two long, colorless hairs paired ventrally near tip. Hind vein entirely colorless, with long brown fringe.

Abdomen normal to genus, narrow at base, widest at segment 6, abruptly narrowed thence to base of 9 which is nearly twice the length of any other segment and narrower at posterior than anterior margin. Setae on segments 9 and 10 long and strong; others small.

Measurements of female (holotype) in mm.: Length of body 1.97; length of head .162; width of head across cheeks .192; length of pronotum .153; width of pronotum .205; length of pterothorax .395; width of pterothorax .334; width of sixth abdominal segment (distended) .547.

Antennal segments:	1	2	3	4	5	6	7	8	9	Total
Length	.042	.061	.128	.067	.055	.039	.027	.015	.012	.446
Width	.042	.030	.027	.030	.027	.024	.018	.012	.006	

Male (macropterous): Smaller than female; about 1.44 mm. long. Colored like female but paler (particularly at tibiae) and with a great abundance of hypodermal pigment showing through on abdomen and thorax. Abdomen widening only moderately from base to segment 3, thence very gradually narrowing to end. Setae on segments 9 and 10 long, those on sides of 9 the longest; other abdominal setae short and weak. No claspers on hind angles of 9.

Measurements of male in mm.: Length of body 1.44; length of head .162; width of head .174; length of pronotum .153; width of pronotum .186; length of pterothorax .319; width of pterothorax .273; width of third abdominal segment .197.

Described from the following material, which does not include all of Dr. Williams' collections:

Yahoue Valley, September 29, by beating, 2 ♀ and 1 ♂; Oua Tom (holotype and allotype), September 20, flowers of *Melaleuca*, 1 ♀ and 1 ♂; hills back of Noumea, September 24, flowering tree, 1 ♀; Noumea, September 25, mango flowers, 1 ♀.

I cannot find in the literature any other species which combines, like the present one, the typical shape of *Aeolothrips*, the single banded fore wings, and the four cross veins, with the apparently nodulose sense areas of *Franklinothrips*. This unusual combination suggested the name *inauditus*.

Superfamily Thripoidea Hood, 1915
Family Thripidae Uzel, 1895
Subfamily Heliothripinae Karny, 1921

Genus **Heliothrips** Haliday

Haliday, Ent. Mag., **3** [5]: 443, 1836.
Karny, s. str., Entomologische Rundschau, **28**: 179-182, 1911.
Karny, Treubia, **1** [4]: 239, 1921.
Priesner, Die Thysanopteren Europas: 125, 1926.

Heliothrips rubrocinctus (Giard)

1901—*Physopus rubrocincta* Giard; Bull. Soc. Ent. France: 263.
1908—*Heliothrips rubrocinctus* (Giard); Franklin: Proc. U. S. Nat. Mus., **33**: 719.

1911—*Heliothrips (Selenothrips) rubrocinctus* (Giard); Karny: Entomologische Rundschau, **28** Jahrgang: 179.

1912—*Heliothrips rubrocinctus* (Giard); Russell: U.S.D.A. Ent. Bul. **99**[2]: 17-29.

1928—*Selenothrips rubrocinctus* (Giard); Moulton: Thys. of the Hawaiian Islands; Proc. Haw. Ent. Soc., **7**: 116.

Known from southern United States, West Indies, Uganda, Mauritius, Ceylon, Hawaii. Three females collected by Dr. Williams at or near Noumea, without host or date record.

Subfamily Chirothripinae Karny, 1921

Genus **Chirothrips** Haliday

Haliday, 1836, Ent. Mag., **3**: 444.

Priesner, 1926, Die Thysanopteren Europas, 136.

Chirothrips aculeatus Bagnall

1926—*Chirothrips similis* (nec Bagnall) Priesner; Die Thysanopteren Europas, 142.

1927—*Chirothrips aculeatus* Bagnall; Ann. Mag. Nat. Hist., [9] **19**: 567.

1939—*Chirothrips aculeatus* Bagnall; Floyd André: A Synopsis of the American Species of Chirothrips; Proc. Ent. Soc. Wash., **41** [6]: 196.

Recorded from England, continental Europe, western United States and Australia.

Collected by Dr. Williams in or near Noumea, as follows: August 23, in spindle of sugar cane, five females; September 6, in flowers of *Lantana sellowiana* Link & Otto, four females; September 27, in spindle of sugar cane, one female; no date, Johnson grass, nine females; numerous males and females in July, without further data.

Subfamily Sericothripinae Karny, 1921
Tribe Sericothripini Priesner, 1926

Genus **Scirtothrips** Shull

Shull, Ent. News, **20** [5]: 222, 1909.

Hood, Proc. Ent. Soc. Wash., **16** [1]: 40, 1914.

Karny, Treubia, **1** [4]: 237, 240, 1921.

Priesner, Die Thysanopteren Europas: 169, 1926.

Moulton, Rev. de Ent., **3** [1]: 102, 1933.

Scirtothrips albomaculatus sp. nov. (pl. XV, figs. A, B, C)

Female (macropterous): Body length .80 mm. Color by transmitted light orange-yellow clouded with brown; the sides of abdominal tergites 2 to 8 with irregular white areas; median area of 8 and all of 9 and 10 evenly light

greyish yellow; 3 to 8 with a narrow dark band on median two-thirds near fore margin; legs lighter than body, with tibiae lighter than femora; fore wing and scale uniformly yellowish brown; hind wing almost colorless, with cloud on basal fifth, with vein brown along most of its length; eyes purplish, nearly black (by reflected light, dark blood red); ocellar crescents red. Antennal segment 1 clear lemon-yellow, 2 light orange-yellow, others yellowish brown. Striation of thin, dark, closely set, transverse lines, conspicuous on back of head, pronotum, fore part of mesonotum, and legs, but not apparent elsewhere.

Head twice as wide as long, widest across eyes; the cheeks arching weakly and converging caudally; front roundly depressed next to the eyes and roundly bulging in the middle, slightly overhanging the antennal bases, which are separated by about the width of basal segment. Eyes large, occupying two-thirds of head length; their facets prominent, relatively large and with coarse, short spines between them. Ocelli about size of facets, close together, far removed from inner margin of eyes; anterior one forwardly directed just ahead of transverse median line across eyes; posterior pair slightly forward of hind margin of eyes. Two minute setae on the ocellar triangle back of the anterior ocellus; a similar seta back of each posterior ocellus and two or three others back of each eye; four longer setae on the front, the median pair forward of the other two which are near to the eye. Antennae more than twice as long as head; segments of shape illustrated; segments 3 and 4 with forked sense cones dorsally and ventrally respectively; 5 with short sense cone outwardly near tip; 6 with single cone inwardly near middle, long, sharp, closely pressed to segment. Forked sense cones rather long and thin, set on about distal third of segment on a transverse shelf caused by the sudden excavation of the segment's surface. Longer hairs concolorous with antennae, rather long and thick, set on the same plane as the forked sense cones; a particularly conspicuous, strongly curved hair on inner surface of segment 2 about middle.

Prothorax somewhat longer and wider than head, widest just ahead of hind margin, its angles almost square, its sides weakly arched; six to eight minute setae on fore margin; about 16 more or less symmetrically dispersed on dorsum and sides; a series of eight on hind margin, six minute and the next to the innermost pair long and strong, about .028 mm. long.

Pterothorax normal; mesothorax much wider than metathorax; all four spines on metascutum inserted near margin, the median spines farther apart from each other than from lateral spines. Fore wings uniformly brown, with usual longitudinal rows of closely set microtrichia; narrowing at basal fourth; with long fringe not wavy on either fore or hind margin. Veins invisible, except fore vein near base; costa with 29 evenly spaced spines; fore vein with 11 in two series of three and eight respectively, plus two widely separated nearer the end; hind vein with a series of five or six distad from middle of wing and one nearer tip of wing; all spines thick, brown. Hind wing pale except at base; its vein conspicuous brown except near base and apex. Wing scale narrow and long, with four strong spines on fore margin, one thinner spine basally on disk, two long transparent hairs paired ventrally near tip. Legs normal, paler than body, abundantly setose but without long hairs.

Abdomen widening gradually to segment 6, thence narrowing more suddenly to end of 10, which is blunt; six intermarginal spines on tergites 2 to 8 the outermost of these approximately of the same size on all segments, the others increasingly strong towards caudal segments; the median pair approximate on first segments, increasingly farther apart towards caudal segments. Tergites 1 to 7 closely and distinctly pubescent on lateral third, with pubescence extending caudally beyond margin as rather long sparse, evenly spaced fringe; tergite 8 pubescent and fringed on whole width; tergites 9 and 10 pubescent on whole width but not fringed. Tergite 9 with the longest

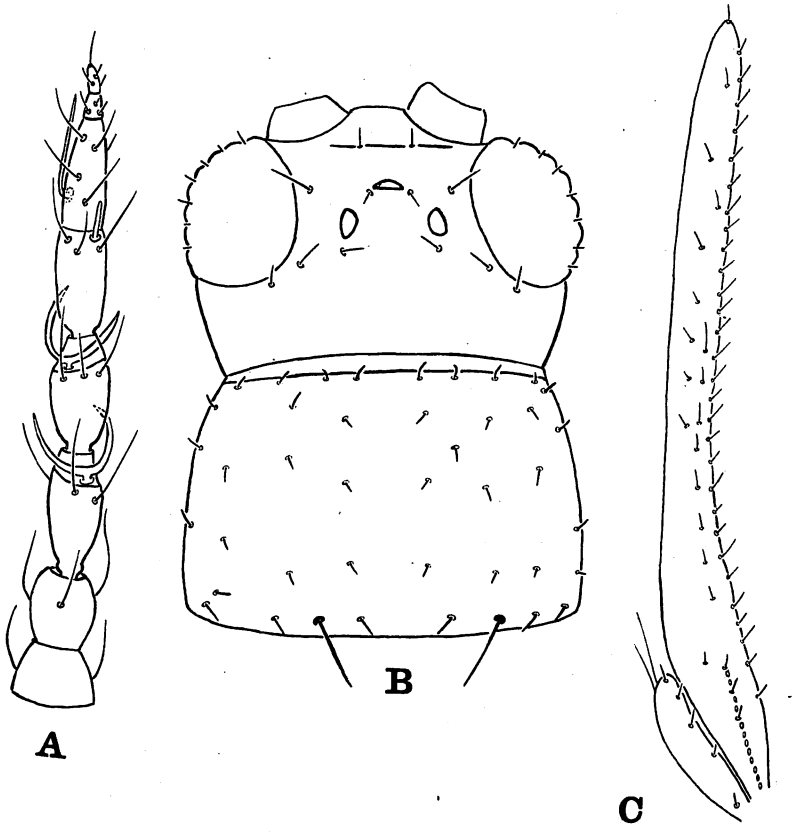


PLATE XV

Scirtothrips albomaculatus sp.n.

A—Right antenna of female, dorsal view.
B—Head and prothorax of female.
C—Left fore wing and wing scale of female, with long fringe hairs omitted.

setae of body on hind angles and four others almost as strong and long on the disk, two close to each other and just caudad of the transverse median line, the other two apart from each other and cephalad of the transverse median; in addition a colorless, inconspicuous seta near hind margin, inward of each hind angle. Tergite 10 with two dark median setae on hind margin not much longer than segment; other setae on sides and sternite of segment pale and weak.

Measurements of female (holotype) in mm.: Length of body .80; length of head .070; width of head .140; length of prothorax .091; width of prothorax .146; length of longest spine on posterior margin of prothorax .028; length of spines on hind angles of segment 9, .061.

Antennal segments:	1	2	3	4	5	6	7	8	Total
	.015	.027	.042	.039	.033	.042	.007	.010	.215

Described from one female collected on a rose flower at Noumea, July 11. The male is unknown.

This species seems to be closely related to *Scirtothrips longipennis* (Bagnall), 1909, and in Priesner's key to the genus runs to that species; but it can be distinguished at once by the chaetotaxy of the wings, and the peculiar white areas on the sides of the abdominal segments.

Ensiferothrips gen. nov.

Head short and wide. Eyes strongly protruding; ocelli present and born on humped vertex. Antennae apparently nine-segmented, with forked trichomes on segments 3 and 4. Mouth cone constricted in distal portion and about as long as prothorax; maxillary palpi two-segmented and labial palpi one-segmented. Striation of head, pronotum, sides of abdominal segments and some other parts of the body reticulate or nearly so. Most of dorsal surface of body and wings thickly beset with short thornlike microtrichia; not so the median third of abdominal segments 2 to 8. Setae of head, thorax, and wings enormously dilated, flattened, the larger ones sword-shaped, the smaller ones usually strongly curved. Legs normal, slender. Wings long, broad at base, gradually reduced to pointed tip; veins not apparent but a series of flat, dilated setae indicating their position.

This new genus is clearly allied to *Scirtothrips,* agreeing with that genus in general features and with Karny's subgenus *Proscirtothrips* in having apparently nine-segmented antennae. It is at once distinguished from all its allies, however, by the clearly reticulate striation and the uniquely flattened and dilated setae of the head, wings, and thorax, whose shape has suggested the generic name: sword-bearing thrips. The genotype is *Ensiferothrips primus* sp. nov., described below.

Ensiferothrips primus sp. nov. (pl. XVI, figs. A, B, C)

Female (macropterous): Length .68 mm. General color by transmitted light, dark brown with red hypodermal pigment showing through abundantly on head, pterothorax and sides of abdominal segments. Eyes black; ocellar crescents red; median third of abdominal segments 2 to 8 much lighter than sides; tips of tibiae and all first tarsal segments pale. Antennal segments 1 and 2 dark brown, concolorous with head; 3, 4 and basal half of 5 pale; the rest of the antennae uniformly light greyish brown. Fore wings with

basal three-fourteenths white, the following six-fourteenths brown, the following two-fourteenths white, the following two-fourteenths brown, and the distal one-fourteenth white; limits between white and brown areas not sharp, wing setae white or brown, corresponding in general to the area of insertion. Hind wings colorless except along all but extreme end of vein, which is dark brown.

Head nearly three times as wide as long; cheeks strongly convergent caudally; vertex elevated into a broad hump and slightly produced frontally, excavate laterally next to eyes; ocelli borne on the hump, the front one anteriorly directed, the others dorso-laterally; eyes large, coarsely faceted, sparsely pilose, strongly protruding frontally and laterally, their dorsal outline round and occupying two-thirds of head length, their ventral outline produced caudally and forming a wide angle; interocellar setae almost as long as diameter of eye, shaped like a wide sword blade, their bases tuberculiform, inserted within ocellar triangle just ahead of each posterior ocellus; two small, dilated, inwardly curved setae approximate and laterad of the anterior ocellus; a similar somewhat smaller seta between each of the former and the margin of the eye; a considerably stronger curved seta on the cheek back of each eye. Mouth cone rather broad; reaching or slightly surpassing the posterior margin of the prothorax; constricted somewhat below the middle and blunt at the end. Maxillary palpi long and slender, two-segmented; first segment slightly dilated distally, longer and wider than 2nd. Labial palpi one-segmented, small, uniformly cylindrical.

Antennae about four times as long as head; inserted caudo-ventrad of vertex and separated at their bases by about the width of segment 1. Segments 3 to 5 pedicillate; 5 and 6 broadly joined; 6 with a complete circular division at about its apical fourth, causing the style to seem three-segmented, the apical segment somewhat longer than either of the other two. Segment 2 with conspicuous, the others with inconspicuous, transverse striae produced into closely set microtrichia which are light or dark colored, according to the segment bearing them; segment 2 with a small circular sense area dorsally near end; segments 3 and 4 with small forked sense cones, respectively dorsal and ventral; a sense cone outwardly on segment 6 thin, translucent and hardly distinguishable from longer hairs; all hairs weak and translucent except a whorl of long, brown, curved setae on segment 2 and one short, curved, distended seta on inner side near tip of segment 1.

Pronotum somewhat less than twice as long as head, slightly wider than head at hind margin; front and hind margins straight; sides slightly arched; surface strongly convex and conspicuously reticulate except at hind angles; ten small, curved, distended setae distributed more or less symmetrically on dorsum and sides; a series of six dark, stout, sword-shaped setae along hind margin, the outermost pair on the hind angles, each seta of the median pair with a minute curved one laterad and approximate to it, all these setae with prominent tuberculiform bases.

Pterothorax longer on sides than combined median lengths of head and pronotum and conspicuously wider than hind margin of pronotum, widest across mesonotum and metanotum and round at hind angles; mesoscutum transversely striate with short, curved lines which tend to form a transversely reticulate pattern; metascutum longitudinally reticulate; other striation of pterothorax also generally reticulate or nearly so. All small setae on sides and notum pale and inconspicuous but under magnification appearing to be sword-shaped and with prominent bases. Metascutum without large setae but with two conspicuous pori paired medianly and distinctly removed from front margin.

Legs normal in structure but hind legs unusually long and thin with both femora and tibiae cylindrical; tarsi two-segmented, the first segment, particularly on hind legs, much longer than second; femora and tibiae with dark,

semi-reticulate striation and beset with many moderately long spines of normal straight shape.

Wings long, reaching to end of body, with many closely set rows of microtrichia. Fore wings wide basally and narrowed rather sharply at basal fourth, whence they narrow gradually to rather pointed end; the costal margin beset with about 30 setae which are stout, evenly spaced, invariably curved towards end of wing and set in prominent bases; the fore and hind veins not distinguishable, but their position marked by series of enormously distended, relatively short, sword-shaped setae inserted on prominent bases, about eight on fore vein with four of them approximate on basal fourth of wing, four at wide intervals on hind vein; fringe on hind margin of wing long, straight, evenly and closely set. Hind wing narrow, with the second one-eighth wider than rest of wing; with fringe on both margins commencing at about basal fourth; fringe on fore margin sparse and shorter than on hind margin; vein dark brown almost to tip of wing.

Abdomen rather broad and when not distended just about as long as head and thorax together; widening abruptly at segment 2 which at hind margin is about equal to 3, 4, and 5, thence narrowing evenly from segment 6 to end of 10 which is blunt. Lateral thirds of segments 2 to 8 reticulately striate and densely beset with short, thorn-like microtrichia which appear as minute dark dots and cause the abdomen to appear paler medianly from segment 2 to 8; segment 1 reticulately striate and beset with microtrichia across its whole width; segments 9 and 10 beset with rather long, thin pubescence and without apparent striation; hind margin of segment 8 with a complete evenly spaced and rather long fringe; hind margins of 7 and 6 with a similar but sparser fringe medianly; segment 1 with a pair of median pori; segments 2 to 8 with a pair of long median setae of normal structure and others, shorter and thicker, on the sides; segment 9 with four strong setae dorsally near posterior margin and segment 10 with two, all of these setae of normal shape, sharply pointed and about as long as segment 10.

Measurements of female (holotype) in mm.: Length of body .68; length of head .045; width of head (across eyes) .131; length of pronotum .073; width of pronotum (hind margin) .143; length of pterothorax .177; width of pterothorax .201; width of abdomen (3rd segment) .243; length of interocellar setae (approx.) .033; length of pronotal setae (approx.) .042.

Described from two females collected on a flowering tree; hills back of Noumea, September 24, 1940. The male is unknown.

Tribe Anaphothripini Priesner, 1926

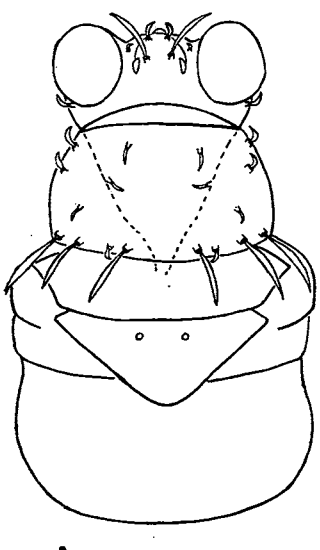
Genus **Anaphothrips** Uzel

Uzel, Monographie der Ordnung Thysanoptera: 142, 1895.
Karny, Treubia, **1** [4]: 242, 1921.
Priesner, Die Thysanopteren Europas: 181, 1926.
Moulton, Rev. de Ent., **3** [1]: 107, 1933.

Anaphothrips speciosus Hood

1919—Hood, Proc. Biol. Soc. Wash., **32**: 76.
1934—Kelly and Mayne, Monograph of the Order Thysanoptera in Australia: 22.

Described from one female taken by sweeping grass at Brooklyn, N. S. W.



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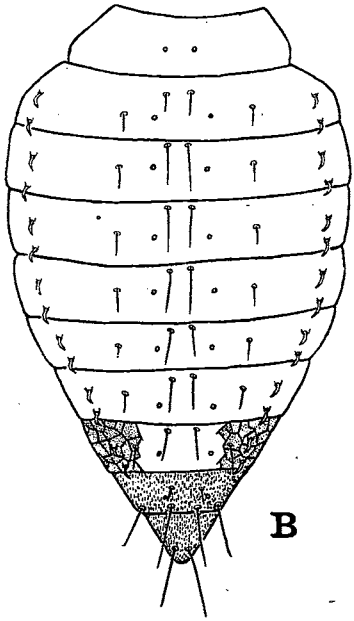

B

C

PLATE XVI

Ensiferothrips primus sp.n.

A—Head and thorax of female. Setae of pterothorax omitted.
B—Dorsal view of abdomen of female; with lateral sculpture of segments 2 to 8 shown only on segment 8.
C—Right antenna of female, dorsal view.

Found by Dr. Williams in Noumea, September 27, in the spindle of sugar cane, and in Nepoui, August, in the spindle of a wild grass resembling *Saccharum*.

Anaphothrips swezeyi Moulton

1927—Proc. Haw. Ent. Soc., **7** [1] : 107.

Known heretofore only from Hawaii, where it is fairly common.

Five females collected by Dr. Williams at Noumea, September 27, in the spindle of sugar cane; one female in the same manner and locality on August 23; one female "on sugar cane" at Nepoui, in August.

Sugar cane is apparently one of the common hosts of this thrips in New Caledonia, which makes it seem strange that the species has not been recorded on that host in Hawaii.

Subfamily Thripinae Karny, 1921

Genus **Taeniothrips** Amyot and Serville

Amyot and Serville, Insectes Hemipteres (Roret's Suite a Buffon) : 644, 1843.

Priesner, Die Thysanopteren Europas : 269, 1926.

Moulton, The Thysanoptera of South America; Rev. de Ent., **3** [1] : 129, 1933.

Taeniothrips kellyanus (Bagnall)

1916—*Physothrips kellyanus* Bagnall; Ann. Mag. Nat. Hist., [8] **17** : 219.

1926—*Physothrips kellyanus* Bagnall; Ann. Mag. Nat. Hist., [9] **18** : 104.

1933—*Taeniothrips kellyanus* (Bagnall) ; Steinweden, Key to All Known Species of the Genus Taeniothrips; Trans. Am. Ent. Soc., **59** : 280.

1934—*Physothrips kellyanus* Bagnall; Kelly and Mayne, Monograph of the Order Thysanoptera in Australia : 25.

Known from many hosts in Queensland and Victoria. Found by Dr. Williams as follows: Noumea, July, two females; Noumea, September 6, six females on *Vitex negundo* Linn.; Hienghene, October 1940, several males and females on *Cerbera* flowers.

Taeniothrips novocaledonensis sp. nov. (pl. XIV, fig. D)

Female (macropterous) : Length about 1.2 mm. Color by transmitted light brown with yellow tinge. Fore tibia (sometimes also middle tibiae), all tarsi, third antennal segment pale yellow with brownish tinge. Fore wings suffused with brown except on basal fourth which is clear except for irregular brown blotches near extreme base and on scale. Eyes purplish black; ocellar crescents red; hypodermal pigmentation red to orange, sometimes absent. Dark narrow band across abdominal segments 3 to 8 near fore margin. Transverse cuticular striations particularly noticeable on dorsum of head, dorsum of thorax, sides of abdominal segments. On metanotum transverse striation in

front and oblique striations on sides form a triangular pattern surrounding the disk, which is subreticulate.

Head considerably wider than long, widest across cheeks; constricted at base of eyes, cheeks thence arching to base of head; space between eyes straight and wide in front. Eyes not protruding, occupying about half the length of the head, coarsely faceted, sparsely pilose. Ocelli larger than facets of eyes, distance between posterior ones longer than between them and anterior ocellus; anterior ocellus forwardly directed, on the transverse line across middle of eyes; posterior ocelli cephalad of posterior margin of eyes and not touching their inner margin; two small setae slightly cephalad of anterior ocellus on each side; a postocellar seta only slightly shorter than interocellars just back of each posterior ocellus, and a series of four or five smaller setae arching around the hind margin of the eye. Antennae about twice as long as the head; generally concolorous with the head, except always segment 3 which is pale yellow; the segments shaped as illustrated; relative length of segments 3 to 6 subject to some variation but 5 always shorter than 3, 4, or 6, and 7 and 8 always about equal to each other; all segments except 1, 7, and 8 with evenly spaced ringlets of microtrichia and with a ring of four long hairs on the distal third of each segment; these hairs always light colored, no more than half the length of the segment bearing them, weaker and shorter on segment 6 than on the others; forked sense cones on segments 3 and 4, and a single sense cone on 6, all rather thin for their length, which is about half of segment bearing them. Mouth cone reaching slightly past middle of posternum, twice constricted, about middle and near tip, which is rounded. Labrum dark in color and sharply constricted near tip; squarely cut off at the end. Segments 1, 2, 3 of maxillary palpi respectively about .012, .008, .016 mm. long and progressively thinner.

Prothorax considerably longer than head and wider on hind margin, the sides straight in specimens not distended and diverging caudally; the sides, fore margin and disk more or less symmetrically beset with about 40 small setae of which the outermost on each side are stouter than the others; the paired setae on hind angles rather thornlike, stout at base, evenly narrowed to a sharp point; a small seta always between the pair, and a series of six (rarely eight) along the hind margin of the prothorax, with the middle two always stouter and longer than the others.

Pterothorax rounded in front, widest at its caudal third; the inner pair of metanotal setae about three-quarters the size of those on angles of prothorax, the outer pair much smaller, both pairs inserted near the anterior margin. Legs normal; tarsi without claw, with dark blotch near extreme end; all femora and tibiae clothed with many short stiff setae; only hind tibiae with a row of about eight colorless, short, stout spines on the inner edge and two stouter ones distally. Wings reaching to about segment 8, of normal shape and structure, with many longitudinal rows of microtrichia; hind fringe of both wings long, thick and wavy; front fringe shorter in both, straight in both, set at longer intervals on posterior wing than on anterior one; veins not apparent except near base of anterior wing, conspicuously tinged with brown on all but tip of posterior wing; setae on costa of fore wing 27; setae on anterior vein of fore wing usually ten, equally spaced on basal half, and three widely apart on distal half, sometimes the basal setae indistinctly divided into groups of 4-4-2 or 4-6, the outermost distal seta always about its own length from tip of wing; setae on posterior vein equally spaced and consistently 16-17; five setae along anterior margin of scale, progressively longer towards tip, one on disk of scale near base, the usual thin translucent pair inserted close together near tip ventrally.

Abdomen widens rather suddenly to segment 3, which is about equal to 4, thence narrows gradually and evenly to end of 10, which is blunt at apex and split along most of its length. Tergites 3 to 8, sometimes also 2, have a

narrow dark stripe on their whole width near the fore margin. Tergites 2 to 8 bear at extreme hind angle a long strong spine and cephalad of this a series of three smaller spines; on tergite 2 the outermost spine of the series is cephalad of the others, which are on the median transverse line; on 3 to 5 all three spines are on the median transverse; on 6 to 8 the middle spine is vestigial or absent. Equidistant from the meson and slightly cephalad of the median transverse line tergites 2 to 7 bear two very minute setae and somewhat outward from these, on the median transverse, two small pori; on tergite 8 the two spines are somewhat stronger and closer together. Tergites 5 to 8 bear near each side a more or less curved row of short microtrichia visible only in clear mounts and under high magnification. The ciliary fringe across tergite 8 is conspicuous, complete, unevenly spaced, rather long and sparse. Tergite 9 bears a row of four stout spines, equally spaced and just caudad of the median transverse; two other shorter, curved, brown spines cephalad of the median transverse line; two stiff, translucent white spines between the series of four and the hind margin of the segment. Segment 10 bears a circlet of six spines of which two on the dorsum and two on the sides are longer than the ventral pair. The epipleurites of 3 to 7 bear a progressively longer seta on the lower hind angle, and two or three spines, not progressively longer, which cannot be accurately located in dorso-ventral mounts although they protrude beyond the sides. Sternites 3 to 7 bear six long setae on the hind margin and a series of 12 or 14 intermarginal setae on or near the median transverse line. Sternite 2 bears only four marginal setae and two intermarginal ones, the latter nearer the meson then the sides.

Measurements of female (holotype) in mm.: Body length 1.24; prothorax length .13; pterothorax length .24; pterothorax width .25; abdomen width (segment 4) .27; head length .09; head width .14; eye length .05; interocellar setae .027; inner setae on hind angle of prothorax .048; outer setae on hind angle of prothorax .045; lateral setae on segment 9, .085; postero-marginal setae on segment 9, .073; terminal setae on segment 10, .094.

Antennal segments:	1	2	3	4	5	6	7	8
Type	.0153	.0306	.0489	.0459	.0336	.0481	.0061	.0061
Paratype	.013	.035	.048	.044	.030	.048	.008	.008

Male (macropterous): Length about 1.04. Color as in female except tip of antennal segment 2 and base of 4 which approximate light shade of 3. Wings as in female, with costa of fore vein bearing 24 setae, anterior vein bearing 11 basal and two distal setae. The glandular areas of abdominal sternites 3 to 7 progressively shorter and wider towards the hind segments but in general long for their width, brownish yellow in color and conspicuous against the darker sternites. Tergite 9 bears, about one-third of its length from the posterior margin, a row of six setae, the outer pair minute and approximate to the hind angles, the middle and inner pairs about half as long as the segment and approximate to the meson, the middle pair curving inwards, the inner pair straight and stiff; on the transverse median a pair of small setae outward from the middle pair mentioned above and a pair of pori inward from the same; another porus distad and inward of each anterior angle; the hind margin roundly emarginate in the middle and the chitin at each posterior angle produced backward and slightly upward in the form of a strong, blunt tooth shaded darker than the rest of the segment.

Measurements of male (allotype) in mm.: Length about 1.04; length of head .104; length of prothorax .116; width of head across cheeks .131; width of prothorax .174; outer seta on hind angle of prothorax .042; inner seta on hind angle of prothorax .042.

Antennal segments:	1	2	3	4	5	6	7	8
	.021	.036	.052	.048	.033	.052	.006	.006

Described from the following material:

Noumea	July ?	unreported host	1 female
Noumea	July 11	rose flower	2 males
Noumea	Sept. 6	*Lantana sellowiana* flowers	1 male
Noumea	Sept. 25	mango flower	1 female
Noumea	Sept. 26	*Lantana camara*	1 male, 1 female
Yahoue Valley	Aug. 24	beating	1 female
La Foa	Sept. 21	nasturtium flowers	6 males, 1 female

Although the males of this species resemble the females, and that is not the case in *Taeniothrips hawaiiensis,* the two species seem to be closely related. In size, shape, and general arrangement of the spines the females of the two species are very much alike. Nevertheless they can be separated by the following differences, which in my series of both species are quite consistent, 1: In *novocaledonensis* the middle and hind tibiae and femora are almost invariably concolorous with the body, the middle tibiae only seldom partly yellow; in *hawaiiensis* the legs are always wholly and uniformly pale yellow. 2: In *novocaledonensis* the abdomen is invariably of the same quality of brown as the thorax, although the thorax is sometimes darker; in *hawaiiensis* the thorax is almost invariably darker than the abdomen and the latter is greyish brown, rather than yellowish brown as in *novocaledonensis.* 3: In *novocaledonensis* the basal spines of the fore vein are ten, seldom separated by wide spaces into groups; in *hawaiiensis* the basal spines of the fore-vein are seven to eight, almost always separated into groups of 4-3 or 4-4. 4: In *novocaledonensis* the number of setae on the posterior vein of the fore wings is consistently 16-17; in *hawaiiensis* the number varies between 11 and 15. In *novocaledonensis* the cheeks are sharply constricted just back of the eyes; in *hawaiiensis* this constriction is only seldom apparent.

Genus **Isochaetothrips** Moulton

Moulton, Thysanoptera from Abyssinia; Ann. Mag. Nat. Hist., [10] **2**: 227, 1928.

Moulton, The Thysanoptera of South America; Rev. de Ent., **3**: [1]: 127, 1933.

Isochaetothrips seticollis (Bagnall)

1915—*Taeniothrips seticollis* Bagnall; Ann. Mag. Nat. Hist., [8] **15**: 591.

1928—*Isochaetothrips seticollis* (Bagnall); Moulton, Thysanoptera from Abyssinia; Ann. Mag. Nat. Hist., [10] **2**: 227.

1934—*Physothrips seticollis* (Bagnall); Kelly and Mayne, Monograph of the Order Thysanoptera in Australia: 24.

Described from a single female collected on *Acacia* flowers in Mundaring Weir, West Australia. There is no record of its im-

portance in Australia, but this is obviously a common species in New Caledonia. The following records of Dr. Williams' collection include only representative material which I have mounted; there are a number of additional specimens in alcohol: "Hills back of Noumea", August, flowering *Jasminum,* a few males and females; Noumea, August 15, on *Croton,* one female; Noumea, September 6, on *Acacia laurifolia* Willd. (maritime), one female; Noumea, September 6, flowers of *Lantana sellowiana* Link & Otto, one female; Hienghene, October 5, on *Cerbera* flowers, one female; Dothio near Thio, October 8, on Myrtaceae, seven females; Oua Tom, September 20, on flowers of *Melaleuca,* two females.

Isochaetothrips insignis sp. nov.

Color by transmitted light lemon-yellow to orange-yellow clouded with brown, prothorax and pterothorax darker; abdominal tergites 2 to 8 with more brown along middle than sides; end of segment 9 and all of 10 brown; a narrow brown band on anterior margin of tergites 2 to 9 with a very thin dark line caudad of this and a similar line cephalad of posterior margin; wings yellowish brown, light and uniform; legs concolorous with body, femora sometimes a little darker; eyes black by transmitted light, red by direct light; ocellar crescents red, hypodermal pigment orange-yellow to red.

Head wider than long, widest across cheeks which are strongly arched; dorsum finely striate transversely; front broadly, shallowly concave between eyes; eyes occupying little less than half the head length, seven or eight facets on their outer margin, rather coarsely and sparsely pilose; ocelli larger than eye facets, close together, far back, the anterior one behind the middle of eyes, the posterior pair almost in line with hind margin of eyes, close to but not touching, their inner margin; a small seta approximate to inner margin of each eye and considerably forward of anterior ocellus; two minute setae—difficult to make out—on the ocellar triangle, immediately caudad of anterior ocellus; postocellar setae about as long as ocellar diameter and just back of posterior ocelli; one or two similar setae laterad and approximate to postocellars, and one or two sometimes stronger setae back of each eye and near outer margin of head. Mouth cone not quite reaching anterior margin of mesothorax, abruptly constricted below middle, thence weakly tapering to end. Antennae of structure normal to genus, characterized by the invariably equal length of segments 3 and 4 and by the rich orange-yellow color of segment 2, contrasting always conspicuously with 1 which is almost colorless and with 3 to 8 which are uniformly brown. Antennal hairs about half length of longest segment, pale, weak, relatively longer and stronger on segment 2. The usual sense cones rather long and thick, colorless, sharp at the end.

Pronotum about half again as long as head, about a fourth again as wide, widest in the middle, its sides arched, its hind angles rounded, with about 40 short, light brown spines scattered over disk and sides, with a row of six somewhat thicker spines along hind margin, with a pair of strong, stiff setae of equal length at each hind angle and a short spine between each pair. Pterothorax normal to genus; the usual setae of mesoscutum and metascutum all lighter, shorter, weaker than those on hind angles of pronotum, the inner pair on metascutum caudad more than their own length from fore margin and about their own length from each other, the outer pair on the fore margin. Legs normal, clothed with many short, pale, stiff hairs; the hind tibiae with the usual series of seven or eight spines along inner edge and the three or four stronger distal ones; all tarsi with the usual dark blotch near tip. Wings washed uniformly with pale yellowish brown; veins not visible except upper vein of fore wing basally and vein of hind wing which is light brown along

most of its length; all setae light brown, translucent, 28 to 34 on costa, 16 to 19 on lower vein, 26 to 30 on upper vein, with the four basal ones always in a series separated from the others by a space. Wing scale with a series of four setae distally and one seta basally on fore margin and one seta basally on disk; with the usual long, translucent, paired hairs ventrally near tip.

Abdomen normal, widening gradually to segment 5, thence narrowing more abruptly to 8 and still more abruptly thence to end; segment 10 squarely truncate at end, not split above; usual setae all brown, relatively short, stiff, those on segment 9 the longest and strongest, those on 10 finer, about length of segment bearing them; fringe on hind margin of 8 consisting of between 20 and 30 evenly spaced, rather long microtrichia, complete across middle of margin but failing to reach sides of the tergite; a similar but coarser, shorter fringe on each side of tergites 2 to 7 occupying about one-eighth of the hind margin on each side; tergites 8, 7 and 6 with a curved line of closely set microtrichia more or less longitudinally near each lateral margin, each line, except under great magnification, appearing as a row of minute dots.

Measurements of female (holotype) in mm.: Length (slightly distended) 1.2; length of head .082; width of head .137; length of pronotum .131; width of pronotum .174; hairs on hind angles of pronotum .03.

Antennal segments:	1	2	3	4	5	6	7	8	Total
Holotype	.021	.033	.039	.039	.030	.039	.006	.009	.216
Paratype	.021	.030	.033	.033	.027	.036	.006	.009	.195

Described from eight females collected by beating at Yahoue Valley, August 29. The male is unknown.

The remarkable and beautiful color of this species suggested the name *insignis*. It may possibly turn out to be synonymous with *myrsiniicola* (Bagnall), which is also described as a yellow species. The description of *myrsiniicola,* however, was based on a single male and until the males of *insignis* are collected and correctly associated with their females it will not be possible to establish the synonymy of the two species, if it is a fact.

Genus **Diarthrothrips** Williams

Williams, A new Thrips Damaging Coffee in British East Africa; Bul. Ent. Res., **6**: 269, 1915.

Diarthrothrips saccharicolus sp. nov. (pl. XIV, figs. B, C)

Female (macropterous): Length about 1.2 mm. (1.5 mm. when completely distended). Color by transmitted light pale brown to dark brown, except all tarsi, distal fourth of fore tibiae (sometimes also of the other tibiae), and antennal segments 3, 4, 5 and tip of 2 which are pale brownish yellow. Ocellar crescents and hypodermal tissue, which is scarce, red. Eyes by direct light red; by transmitted light black. Wings pale brownish yellow, almost colorless in some specimens; the vein on hind wing narrowly dark from basal third to distal fifth. Striation consisting of delicate, transverse, anastomosing lines more noticeable at base of head, base and sides of prothorax, all of abdominal tergites 1 and 9, and sides of other abdominal tergites. Mesoscutellum longitudinally reticulate.

Head a little longer than wide; sides parallel; occiput a little swollen and projecting somewhat beyond the eyes, slightly overhanging the antennal bases. Eyes large, hardly projecting, evenly rounded dorsally but ventrally their angle produced slightly backwards, the facets with sparse pilosity between them, about eight occupying the outer outline of the eye. Ocelli somewhat

larger than facets of eye, about equidistant from each other, the front one just ahead of a transverse line across the middle of the eyes, the posterior pair forward of the caudal margin of the eyes and separated from the eyes by less than one ocellar diameter. Anteocellar spines about three-fourths as long as width of eye, placed just out of ocellar triangle on a tangent projected laterally from the caudal margin of the front ocellus. A transverse row of four minute setae on the occiput; a similar row curving just caudad of each eye; a small seta on either side of the meson about midway between caudal margin of eyes and base of head. Mouth cone long, bent downwards; when pressed against prosternum in mounted specimens not too far distended reaching or surpassing fore margin of mesosternum, suddenly constricted at somewhat more than half its length from the base, coarsely striated near tip. Maxillary palpi, two-segmented; the distal segment longer and thinner than basal one, tapering but slightly, provided with three or four long hairs at the end. Labial palpi relatively long and thin, apparently one-segmented. Antennae as illustrated, eight-segmented, about one and five-sevenths as long as the head; pubescence sparse and weak, the longer setae always near the end of the segment, always translucent, never longer than half of longest (6th) segment; segments 3 and 4 with small, thin forked trichomes, latero-dorsad and ventrad, respectively; segment 3 also with a small single trichome outwardly and ventro-laterally, and segment 6 with a similar but longer trichome on the inner edge.

Prothorax but slightly longer than head; its sides almost straight, diverging to caudal margin, which is one-fourth wider than fore margin. Two long thin spines at each hind angle, with one minute seta between them and a series of six small setae spaced along the hind margin; a similar series of eight small setae along the fore margin and 14 dispersed more or less symmetrically on the disk and sides.

Pterothorax about as long as head and prothorax together, smoothly rounded in front, widening at sides to square hind angles; wider than prothorax at about a fourth of its length from the fore margin, about equally wide across hind margin. Legs normal, the hind pair longer, the front pair thicker than the others; hairs few, translucent, thin excepting two stout distal spines on hind tibiae and a row of four short, stout setae on the inner edge of same. Tarsi normal, two-segmented, the distal segment longer, the division between the two oblique; without claws but bearing three or four translucent spines of which one near the end and inside of hind tarsi is much the strongest; a dark blotch ventrally near tip of all. Wings long and narrow, with microtrichia arranged in close longitudinal lines; veins of fore wing invisible but their position marked by series of setae, fore vein with six to eight near the base and two near the end, hind vein with seven more or less equally spaced, costal vein with 16 progressively longer and stronger towards end of wing and also with many long, thin, straight, rather widely spaced fringe hairs; hind fringe hairs long, thin, wavy, colorless, the first one inserted close to the basal seta of the series on the hind vein; scale with four setae dorsad on fore margin, two of same length on the median line, two much longer ones paired and rising from prominent bases ventrally near distal end. Hind wing with rather sparse fringes; the hind fringe less so than the fore fringe, its hair long and wavy.

Abdomen slender, widening gradually to segment 5, thence tapering more suddenly to end; segment 9 the longest, 10 the shortest, about one-half the length of 9, split along its entire length dorsally; setae on all segments except 8, 9, and 10 weak, short, colorless; setae on segments 9 and 10 about equally long, light brown.

Measurements of holotype (female) in mm. (paratype in parentheses): Length 1.16 (1.16); head length .1462 (.1376); head width .1462 (.1204); interocellar setae .0412; prothorax length .....(.1376); prothorax width on hind margin .....(.1462); abdomen length .7224 (.7310); abdomen width on

segment 5.....(.2766); fore wing length .767; outer and inner setae on hind angle of prothorax (approx.) .0546; longest setae on abdominal segments 9 and 10 (approx.) .1443.

Antennal segments (in microns)	1	2	3	4	5	6	7	8	Total
Length	20	37	41	33	28	53	12	16	240
Width	24	24	16	20	20	20	8	4	

Described from two females collected in Noumea, July; 1 female, ex sugar cane, Col de la Pirogue, September 13; and two females in spindle of sugar cane, Noumea, September 27. The male is not known.

The genus *Diarthrothrips* was erected by Williams for the species *coffeae,* which was found injuring coffee in British East Africa and has remained up to now the only known species of the genus. The new species is apparently very close to *coffeae* but differs, according to description and figures, in the shape of antennal segments and sense cones and in the chaetotaxy of the wings. In *coffeae* the sense cones are strong, forked near their bases, and inserted squarely on the ventral and dorsal surfaces of each segment. In *saccharicolus* the sense cones are weak, forked near the distal end, and, at least on segment 3, inserted close to or on the outer surface of the segment. Of the ring joint sometimes visible on antennal segments 4 and 5 of *coffeae,* there is no sign in my series of *saccharicolus.*

Genus **Thrips** Linné

Linné, Fauna Suecica, ed. 1: 220, 1776.

Uzel, Monographie der Ordnung Thysanoptera: 173, 1895.

Priesner, Die Thysanopteren Europas: 343, 1928.

Moulton, The Thysanoptera of South America; Rev. de Ent., **3** [1]: 132, 1933.

Thrips tabaci Lindeman

1883—*Thrips solanaceorum* (Widgalm) Portschinsky; Revue Mens. d'Ent. St. Petersb., **1** [3]: 44 (without description).

1888—*Thrips tabaci* Lindeman; Die schadl. Insekten d. Tabak in Bessarabien, **15**: 61-75.

1921—*Thrips tabaci* Lindeman; Ahlberg, Nat. Hist. Juan Fernandez and Easter Island: 275.

1926—*Thrips tabaci* Lindeman; Karny, Studies on Indian Thysanoptera; Memoirs of the Dept. of Agric. in India, Ent. Ser., **9** [6]: 99.

1927—*Thrips tabaci* Lindeman; Moulton, Thys. of the Hawaiian Islands, Proc. Haw. Ent. Soc., **7** [1]: 111.

1928—*Thrips tabaci* Lindeman; Priesner, Die Thysanopteren Europas: 433.

1934—*Thrips tabaci* Lindeman; Moulton, The Thys. of South America; Revista de Entomologia, **3** [1]: 132.

1934—*Thrips tabaci* Lindeman; Kelly and Mayne, Monograph of the Order Thys. in Australia: 28.

1941—*Thrips tabaci* Lindeman; Bianchi, Thysanoptera and Aphididae New to the Island of Midway; Proc. Haw. Ent. Soc., **11** [1]: 37.

1944—*Thrips tabaci* Lindeman; Lever, Thrips Injury to Lettuce; Agricultural Journal (Suva, Fiji), **15** [1]: 14.

New Caledonia can now be added to the wide distribution of this ubiquitous species. Dr. Williams' collection consists of many females taken on onion plants at Nakety, October 8.

Thrips imaginis Bagnall

1926—Bagnall: Annals and Magazine of Natural History, [9] **18**: 111.

1934—Kelly and Mayne: Monograph of the Order Thysanoptera in Australia: 28.

Found commonly in all the states of Australia on a long list of hosts, wild and cultivated. Collected by Dr. Williams in Noumea, two females in a rose flower, July 11, and one female on a flower of *Lantana camara* Linn., September 26.